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Date: OCTOBER 19, 2004

To: EXAMINER PIZIALI, J.
U.S. PATENT AND TRADEMARK OFFICE

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Client/Matter No.: NL 000045 (7790/214)

of Pages: 26

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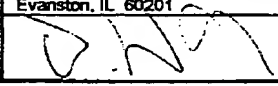
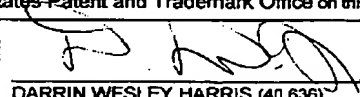
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| | Application Number | 09/781,383 |
| | Filing Date | FEBRUARY 12, 2001 |
| | First Named Inventor | KAREL E. KUIJK |
| | Group Art Unit | 2673 |
| | Examiner | PIZIALI, J. |

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PATENT
Case No. NL 000045
(7790/214)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re patent application of:

KAREL E. KUIJK

Serial No.: 09/781,383

Filed: FEBRUARY 12, 2001

For: DISPLAY DEVICE

Examiner: PIZIALI, JEFFREY J.

Group Art Unit: 2673

APPEAL BRIEF

Mail Stop **Appeal Brief - Patents**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Appellant herewith respectfully presents a Brief on Appeal as follows:

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1. REAL PARTY IN INTEREST

The real party in interest is Koninklijke Philips Electronics N.V., a corporation of The Netherlands having an office and a place of business at Groenewoudseweg 1, Eindhoven, Netherlands 5621 BA. Koninklijke Philips Electronics N.V. is the ultimate parent of the assignee of record Philips Electronics North America Corporation, a Delaware corporation having an office and a place of business at 1251 Avenue of the Americas, New York, NY 10020-1104. Philips Electronics North America Corporation intends to further assign this application to Koninklijke Philips Electronics N.V.

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2. RELATED APPEALS AND INTERFERENCES

Appellant and the undersigned attorney are not aware of any other appeals or interferences which will directly affect or be directly affected by or having a bearing on the Board's decision in the pending appeal.

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3. STATUS OF CLAIMS

Claims 1-18 are currently pending in the present application, and are the claims on appeal. See, Claims Appendix.

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4. STATUS OF AMENDMENTS

Appellant filed an after final request for reconsideration under 37 C.F.R. §1.116 in response to a Final Office Action dated April 19, 2004. The request for reconsideration did not contain any claims amendments.

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5. SUMMARY OF THE INVENTION

A display device of the present invention is generally shown in FIG. 1. As shown, a liquid crystal 6 is between a substrate 4 provided with row electrodes 2 and a substrate 5 provided with column electrodes 3. Electrodes 2 and 3 overlap to define a matrix 1 of pixels. A column drive means for driving column electrodes 3 in conformity with an image 10 to be displayed consists of a row function generator 7, a row function generator 9, a buffer memory 11, a XOR array 12, a summing logic 13 and a column driver circuit 14. A row drive means for driving row electrodes 2 which, in the operating condition, sequentially supply groups of p row electrodes 2 with p mutually orthogonal signals, consists of row function generator 7 and row driver circuit 8. See, U.S. Patent Application Serial No. 09/781,383 at page 3, line 15 to page 4, line 6.

The present application teaches a use of four (4) Walsh functions as illustrated in FIG. 2a as a basis for obtaining the p mutually orthogonal signals as illustrated in FIG. 2b and a use of eight (8) Walsh functions as illustrated in FIG. 3a as a basis for obtaining the p mutually orthogonal signals as illustrated in FIG. 3b may lead to artefacts such as crosstalk. This is due in part to (1) the absence of one pulse having a first polarity while the remaining pulses have an opposing second polarity for each time $\Delta t1 - \Delta t4$ as shown in FIG. 2b, and (2) the absence of one pulse having a first polarity while the remaining pulses have an opposing second polarity for each time $\Delta t1 - \Delta t8$ as shown in FIG. 3b. See, U.S. Patent Application Serial No. 09/781,383 at page 4, lines 7-23.

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To overcome this problem, the present invention obtains the mutually orthogonal signals as pulses from at least two types of orthogonal functions having four elementary units of time as illustrated in FIG. 4a, within which four elementary units of time one pulse each time has a first polarity which opposes a second polarity of the other pulses as illustrated in FIG. 4b. See, *U.S. Patent Application Serial No. 09/781,383* at page 4, line 24 to page 6, line 25.

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6. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-7, 9-15, 17, and 18 stand finally rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,677,705 to *Shimura* et al.

Claims 8 and 16 stand finally rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,677,705 to *Shimura* et al. in view of U.S. Patent No. 6,252,573 B1 to *Ito* et al.

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7. **ARGUMENT**

Shimura. A proper understanding of *Shimura* reveals that *Shimura* fails to teach or suggest the orthogonal functions illustrated in FIG. 4a of the present application, and the mutually orthogonal signals derived therefrom as illustrated in FIG. 4b of the present application.

Specifically, FIG. 5 of *Shimura* illustrates eight (8) Walsh functions. See, *Shimura* at column 3, line 59 to column 5, line 59. This teaching by *Shimura* is analogous with the eight (8) Walsh functions illustrated in FIG. 3a of the present application, which teaches that the mutually orthogonal pulses derived from such Walsh functions as illustrated in FIG. 3b of the present application fail to obtain one pulse having a first polarity while the remaining pulses have an opposing second polarity for each time t1-t8 as shown in FIG. 5 of *Shimura*. Thus, despite the fact that *Shimura* fails to teach or suggest the mutually orthogonal pulses to be derived from the eight (8) Walsh functions illustrated in FIG. 5 of *Shimura*, those having ordinary skill in the art will appreciate that any such mutually orthogonal pulses to be derived from the eight (8) Walsh functions illustrated in FIG. 5 of *Shimura* would not correspond to the mutually orthogonal pulses illustrated in FIG. 4a of the present application as required by independent claims 1 and 9 of the present application.

Furthermore, Examiner Piziali's has incorrectly interpreted the eight (8) Walsh functions as illustrated in FIG. 5 of *Shimura* as being the mutually orthogonal pulses as

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recited in independent claims 1 and 9 of the present application instead of correctly interpreting the eight (8) Walsh functions as illustrated in FIG. 5 of *Shimura* as being the orthogonal functions as recited in independent claims 1 and 9 of the present application. Nonetheless, the Appellant has demonstrated that, even under Examiner Piziali's incorrect interpretation of the eight (8) Walsh functions as illustrated in FIG. 5 of *Shimura*, *Shimura* still fails to teach or suggest the eight (8) Walsh functions as having only one pulse with a first polarity that opposes the second polarity of the other pulses for each elementary unit of time as evidenced by the following TABLE:

| TIME (t) | FIRST POLARITY (+1) | SECOND POLARITY (-1) |
|----------|--|--|
| 1 | $\emptyset(1) - \emptyset(8)$ | None |
| 2 | $\emptyset(1) - \emptyset(4)$ | $\emptyset(5) - \emptyset(8)$ |
| 3 | $\emptyset(1), \emptyset(2), \emptyset(7), \emptyset(8)$ | $\emptyset(3) - \emptyset(6)$ |
| 4 | $\emptyset(1), \emptyset(2), \emptyset(5), \emptyset(6)$ | $\emptyset(3), \emptyset(4), \emptyset(7), \emptyset(8)$ |
| 5 | $\emptyset(1), \emptyset(4), \emptyset(5), \emptyset(8)$ | $\emptyset(2), \emptyset(3), \emptyset(6), \emptyset(7)$ |
| 6 | $\emptyset(1), \emptyset(4), \emptyset(6), \emptyset(7)$ | $\emptyset(2), \emptyset(3), \emptyset(5), \emptyset(8)$ |
| 7 | $\emptyset(1), \emptyset(3), \emptyset(6), \emptyset(8)$ | $\emptyset(2), \emptyset(4), \emptyset(5), \emptyset(7)$ |
| 8 | $\emptyset(1), \emptyset(3), \emptyset(5), \emptyset(7)$ | $\emptyset(2), \emptyset(4), \emptyset(6), \emptyset(8)$ |

To support his untenable position, Examiner Piziali's applies an indiscriminate division of a time segment into an infinite number of sub-segments of time that enables Examiner Piziali to assert that the eight (8) Walsh functions of *Shimura* correspond to the mutually orthogonal pulses of independent claims 1 and 9. However, this indiscriminate

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division of a time segment by Examiner Piziali is neither taught nor suggested by *Shimura*. Moreover, this indiscriminate division of a time segment by Examiner Piziali still requires all eight (8) Walsh functions be considered when attempting to read *Shimura* on the mutually orthogonal independent claims 1 and 9. Thus, Examiner Piziali can not selectively pick a subset of the eight (8) Walsh functions in attempting to support his untenable position.

In summary, *Shimura* is no more than cumulative to FIG. 3a of the present application, and *Shimura* fails to teach or suggest a solution to the artefact problems created by Walsh functions involving orthogonal functions and mutually orthogonal pulses that correspond to FIGS. 4a and 4b of the present application.

Anticipation. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Claims 1, 8, 9 and 16-18. The Appellant respectfully traverse this anticipation rejection of independent claims 1 and 9, because *Shimura* fails to disclose and teaches away from "wherein the mutually orthogonal signals are pulses obtained from at least

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two types of orthogonal functions having four elementary units of time, within which four elementary units of time one pulse each time has a first polarity which opposes a second polarity of the other pulses” as recited in independent claim 1, and “wherein the *p* mutually orthogonal signals are pulses obtained from at least two types of orthogonal functions having four elementary units of time” and “wherein, for each elementary unit of time, one pulse has a first polarity that opposes a second polarity of the other pulses” as recited in independent claim 9.

Withdrawal of the rejection of independent claims 1 and 9 under 35 U.S.C. §102(b) as being anticipated by *Shimura* is therefore respectfully requested.

Claim 8 depends from independent claim 1. Therefore, dependent claim 8 includes all of the elements and limitations of independent claim 1. It is therefore respectfully submitted by the Appellant that dependent claim 8 is allowable over *Shimura* in view of *Ito* for at least the same reason as set forth with respect to independent claim 1 being allowable over *Shimura*. Withdrawal of the rejection of dependent claim 8 under 35 U.S.C. §103(a) as being unpatentable over *Shimura* in view of *Ito* is therefore respectfully requested.

Claim 16 depends from independent claim 9. Therefore, dependent claim 16 includes all of the elements and limitations of independent claim 9. It is therefore respectfully submitted by the Appellant that dependent claim 16 is allowable over *Shimura* in view of *Ito* for at least the same reason as set forth with respect to independent claim 9 being allowable over *Shimura*. Withdrawal of the rejection of

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dependent claim 16 under 35 U.S.C. §103(a) as being unpatentable over *Shimura* in view of *Ito* is therefore respectfully requested.

Claim 17 depends from independent claim 1. Therefore, dependent claim 17 includes all of the elements and limitations of independent claim 1. It is therefore respectfully submitted by the Appellant that dependent claim 17 is allowable over *Shimura* for at least the same reason as set forth with respect to independent claim 1 being allowable over *Shimura*. Withdrawal of the rejection of dependent claim 17 under 35 U.S.C. §102(b) as being anticipated by *Shimura* is therefore respectfully requested.

Claim 18 depends from independent claim 9. Therefore, dependent claim 18 includes all of the elements and limitations of independent claim 9. It is therefore respectfully submitted by the Appellant that dependent claim 18 is allowable over *Shimura* for at least the same reason as set forth with respect to independent claim 9 being allowable over *Shimura*. Withdrawal of the rejection of dependent claim 18 under 35 U.S.C. §102(b) as being anticipated by *Shimura* is therefore respectfully requested.

Claims 2 and 10. The Appellant respectfully traverse this anticipation rejection of dependent claims 2 and 10, because *Shimura* fails to disclose and teaches away from “wherein the orthogonal signals are pulses obtained from orthogonal functions having four elementary units of time, within which four elementary units of time the one pulse having the first polarity which opposes the second polarity of the other pulses each time shifts by one elementary unit of time” as recited in dependent claim 2, and “wherein, for

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each elementary unit of time, one pulse has a first polarity that opposes a second polarity of the other pulses” as recited in dependent claim 10.

Withdrawal of the rejection of dependent claims 2 and 10 under 35 U.S.C. §102(b) as being anticipated by *Shimura* is therefore respectfully requested.

Claims 3 and 11. The Appellant respectfully traverse this anticipation rejection of dependent claims 3 and 11, because *Shimura* fails to disclose and teaches away from “wherein the orthogonal signals are pulses obtained from orthogonal functions having four elementary units of time which, viewed in a time sequence, are situated one after the other” as recited in dependent claim 3, and “wherein the four elementary units of time viewed in a time sequence are situated one after the other” as recited in dependent claim 11.

Withdrawal of the rejection of dependent claims 3 and 11 under 35 U.S.C. §102(b) as being anticipated by *Shimura* is therefore respectfully requested.

Claims 4 and 12. The Appellant respectfully traverse this anticipation rejection of dependent claims 4 and 12, because *Shimura* fails to disclose and teaches away from “wherein at least two orthogonal signals have opposed DC contents” as recited in dependent claim 4, and “wherein at least two orthogonal signals have opposed DC contents” as recited in dependent claim 12.

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Withdrawal of the rejection of dependent claims 4 and 12 under 35 U.S.C.
§102(b) as being anticipated by *Shimura* is therefore respectfully requested.

Claims 5 and 13. The Appellant respectfully traverse this anticipation rejection of dependent claims 5 and 13, because *Shimura* fails to disclose and teaches away from “wherein the orthogonal signals are pulses obtained from orthogonal functions having four elementary units of time, in which the elementary units of the orthogonal functions are interwoven” as recited in dependent claim 5, and “wherein the four elementary units of time are interwoven” as recited in dependent claim 13.

Withdrawal of the rejection of dependent claims 5 and 13 under 35 U.S.C.
§102(b) as being anticipated by *Shimura* is therefore respectfully requested.

Claims 6 and 14. The Appellant respectfully traverse this anticipation rejection of dependent claims 6 and 14, because *Shimura* fails to disclose and teaches away from “wherein $p = 4$, and in that four orthogonal signals have identical DC contents and four are free from a DC voltage” as recited in dependent claim 6, and “wherein $p = 4$ ” and “wherein four orthogonal signals have identical DC contents and four orthogonal signals free from a DC voltage” as recited in dependent claim 14.

Withdrawal of the rejection of dependent claims 6 and 14 under 35 U.S.C.
§102(b) as being anticipated by *Shimura* is therefore respectfully requested.

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Claims 7 and 15. The Appellant respectfully traverse this anticipation rejection of dependent claims 7 and 15, because *Shimura* fails to disclose and teaches away from "wherein the DC content of 2 orthogonal signals of the orthogonal signals having an identical DC content is opposed to that of the two other orthogonal signals" as recited in dependent claim 7, and "the DC content of 2 orthogonal signals of the orthogonal signals having an identical DC content is opposed to that of the two other orthogonal signals" as recited in dependent claim 15.

Withdrawal of the rejection of dependent claims 7 and 15 under 35 U.S.C. §102(b) as being anticipated by *Shimura* is therefore respectfully requested.

Dated: **October 19, 2004**

Respectfully submitted,
Karel E. Kuijk

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CLAIMS APPENDIX

1. A display device, comprising:

a liquid crystal between a first substrate provided with row or selection electrodes and a second substrate provided with column or data electrodes, said row electrodes and said column electrodes overlapping to define pixels;

column drive means for driving the column electrodes in conformity with an image to be displayed; and

row drive means for driving the row electrodes which, in the operating condition, sequentially supply groups of p row electrodes with p mutually orthogonal signals,

wherein the mutually orthogonal signals are pulses obtained from at least two types of orthogonal functions having four elementary units of time, within which four elementary units of time one pulse each time has a first polarity which opposes a second polarity of the other pulses.

2. The display device of claim 1, wherein the orthogonal signals are pulses obtained from orthogonal functions having four elementary units of time, within which four elementary units of time the one pulse having the first polarity which opposes the second polarity of the other pulses each time shifts by one elementary unit of time.

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3. The display device of claim 1, wherein the orthogonal signals are pulses obtained from orthogonal functions having four elementary units of time which, viewed in a time sequence, are situated one after the other.
4. The display device of claim 3, wherein at least two orthogonal signals have opposed DC contents.
5. The display device of claim 1 or 2, wherein the orthogonal signals are pulses obtained from orthogonal functions having four elementary units of time, in which the elementary units of the orthogonal functions are interwoven.
6. The display device of claim 1 or 2, wherein $p = 4$, and in that four orthogonal signals have identical DC contents and four are free from a DC voltage.
7. The display device of claim 6, wherein the DC content of 2 orthogonal signals of the orthogonal signals having an identical DC content is opposed to that of the two other orthogonal signals.
8. The display device of claim 1 or 2, wherein said row drive means inverts the orthogonal signals after each frame period.

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9. A display device, comprising:
- a plurality of pixels defined by an overlapping of a plurality of row electrodes and a plurality of column electrodes; and
- drive means for driving said plurality of row electrodes to sequentially supply groups of p row electrodes with p mutually orthogonal signals,
- wherein the p mutually orthogonal signals are pulses obtained from at least two types of orthogonal functions having four elementary units of time, and
- wherein, for each elementary unit of time, one pulse has a first polarity that opposes a second polarity of the other pulses.
10. The display device of claim 9, wherein the one pulse having the first polarity which opposes the second polarity of the other pulses is shifted among the fourth elementary units of time.
11. The display device of claim 9, wherein the four elementary units of time viewed in a time sequence are situated one after the other.
12. The display device of claim 9, wherein at least two orthogonal signals have opposed DC contents.

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13. The display device of claim 9, wherein the four elementary units of time are interwoven.
14. The display device of claim 9,
wherein $p = 4$; and
wherein four orthogonal signals have identical DC contents and four orthogonal signals free from a DC voltage.
15. The display device of claim 14, the DC content of 2 orthogonal signals of the orthogonal signals having an identical DC content is opposed to that of the two other orthogonal signals.
16. The display device of claim 9, wherein said row drive means inverts the orthogonal signals after each frame period.
17. The display device of claim 1,
wherein the first polarity is a negative polarity; and
wherein the second polarity is a positive polarity.
18. The display device of claim 9,
wherein the first polarity is a negative polarity; and